Vol. 15 SEPTEMBER, 1950 No. 9

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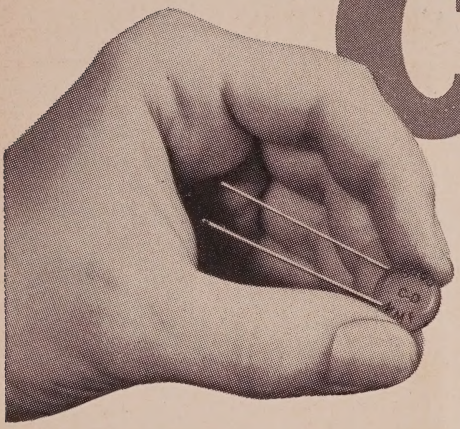

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RESONANT CAPACITORS IN RADIO RECEIVER CIRCUITS

Cornell-Dubilier Type NF capacitors are a unique and useful new circuit component. Although it resembles the conventional paper tubular capacitor and is of no larger size, the Type NF section is wound in such a manner as to provide simultaneously a predetermined amount of self-inductance. This inductance effectively is in series with the capacitance of the unit. The amount of inductance is chosen to resonate the capacitor at the intermediate frequency of 455 kilocycles. Thus, the Type NF capacitor actually is a compact series-resonant 455-kc. filter.

The superiority of the resonant capacitor is readily apparent. Higher bypassing efficiency is obtainable in most circuits normally operated at the resonant frequency of the capacitor than could be obtained with a simple bypass capacitor alone. The lower impedance provided by the resonant circuit results in higher conduction of the currents to be bypassed. An examination of the following figures will bear out this fact. The reactance of a 0.1 microfarad bypass capacitor is 3.5 ohms at 455 kc., while the impedance of the Type NF-10178 0.1 mfd. resonant capacitor is only 1 ohm. This resonant capacitor thus is 3½ times more effective than the common 0.1 mfd. capacitor. Also; a conventional 0.05 mfd. capacitor has a reactance of 7 ohms at 455 kc., while the Type NF-10170 resonant capacitor has an impedance of only 1.75 ohm at that frequency, making the 0.05 mfd. resonant capacitor 4 times more effective than a conventional bypass capacitor of the same capacitance.

While the foregoing facts regarding the effectiveness of the series resonant bypass circuit have been acknowledged for some time by radio engineers and service technicians, several considerations including space limitations have discouraged the use of such filters. The Type NF capacitor makes it possible for the first time to obtain the advantages of the series resonant circuit without requiring that an external coil be used in combination with a capacitor. The self-inductance of the NF-10170 0.05 mfd. capacitor is approximately 0.0024 millihenry, that of the NF-10178 0.1 mfd. capacitor approximately 0.0012 m. h., and that of the NF-10137 0.2 mfd. capacitor approximately 0.0006 m. h.

The NF Series resonant capacitors currently are offered in three popular bypass values: 0.05 mfd. 400 v. d. c. (NF-10170), 0.1 mfd. 400 v. d. c. (NF-10178), and 0.2 mfd. 400 v. d. c. (NF-10137). All are resonant at 455 kc. These units are of the same sizes as conventional tubular capacitors having the same capacitance and voltage ratings. The 0.05 mfd. unit is ½" outside diameter 1⅛" long, the 0.1 mfd. unit ½" o. d. and 1⅝" long, and the 0.2 mfd. unit $\frac{9}{16}$" o. d. and 1⅞" long. Tinned copper pigtail leads are provided. Wax impregnation of the capacitor section and wax-dipped cardboard tube casing seals the capacitor against moisture. The operating temperature range is —20°C. to +65°C. Other capacitances, frequencies, voltage ratings, temperature ratings, and case construction are available on special order.

Some of the advantages obtained by use of Type NF resonant capacitors instead of conventional bypass capacitors in radio receivers, especially in a. c. - d. c. sets, are (1) elimination of i. f. oscillation by more effective bypassing of plate, screen, and cathode

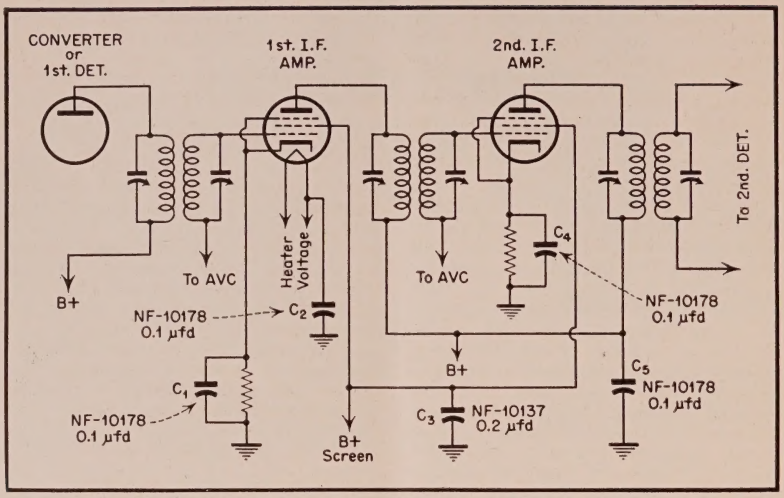

Fig. 1. Typical 455-kc. i.f. amplifier, showing installation points for resonant capacitors.

circuits in i. f. amplifier stages; (2) better conversion efficiency as a result of lower-impedance bypassing of the converter tube shield electrode; (3) cleaner operation of a. v. c. filter circuits; (4) improved i. f. amplifier and 2nd detector stability: and (5) more complete removal of noise and other extraneous pickup from the power line. Use of Type NF capacitors to bypass plate, screen, and cathode circuits in 455-kc. i. f. amplifiers often results in improved gain. Similar use of these capacitors in r. f. amplifier and 1st detector circuits materially reduces interference arising from commercial stations operating on frequencies close to the 455-kc. intermediate frequency of the receiver.

The obvious advantages afforded by the resonant capacitor recommend its inclusion in newly-designed receivers. Also, it will be good practice to use this type of capacitor when replacing bypass units in i. f. amplifiers and 2nd detectors operated at 455 kc. The following paragraphs call attention to key points in radio receivers at which improved operation may be expected through use of resonant capacitors. A specific member of the NF Series is indicated in each case.

I. F. Amplifier

Figure 1 shows a typical 2-stage intermediate frequency amplifier. In this circuit, five installation points are indicated where resonant capacitors may be used to advantage. The 0.1 mfd. Series NF capacitors C_1 and C_4 provide reduced-impedance paths for the i. f. component in the cathode circuits. The 0.2 mfd. resonant screen bypass capacitor (C_3) and the 0.1 mfd. resonant plate bypass capacitor (C_5) permit more effective bypassing of the screen and plate circuits, respectively. Use of these capacitors will aid materially in overcoming i. f. oscillation and in boosting the overall amplifier efficiency.

In some i. f. amplifiers, the cathode resistors are returned to a gain control potentiometer instead of to ground. In this instance, return each resonant cathode bypass capacitor directly to ground, as indicated in Figure 1.

In communications receivers intended for code reception, a beat frequency oscillator is operated in conjunction with the intermediate frequency amplifier. Resonant plate and screen bypass capacitors in this type of oscillator will more effectively block the passage of i. f. oscillation back into the power supply leads. Coupling via the power leads often results in intermediate frequency harmonics finding their way into the superhet front end.

Second Detector

A typical superhet 2nd detector — a. v. c. — 1st audio circuit, employing a twin diode-triode tube, is shown in Figure 2. Two installation points for resonant capacitors are shown. The 0.05 mfd. resonant capacitor C_1 provides more effective removal of intermediate frequency fluctuations from the a. v. c. bias voltage. The cathode resistor of the 2nd detector combination tube ordinarily is bypassed only with an electrolytic capacitor. This capacitor is most effective at the audio frequencies handled by the amplifier section of this tube. The paralleled 0.1 mfd. resonant capacitor (C_2) shown in Figure 2 provides additional bypass action at the intermediate frequency handled by the diode 2nd detector — a. v. c. section.

Frequency Converter

Figure 3 is the circuit of a typical battery-operated pentagrid converter stage, such as is found in portable and 2-way superhet receivers. The 0.05 mfd. resonant capacitor (C_1) serves as an a. v. c. filter and is effective also in bypassing to ground any interference at frequencies near the 455 kc. intermediate frequency which might be picked up by the loop antenna. Resonant capacitor C_2 bypasses the B-plus end of the oscillator circuit to provide better converter action.

A. C. - D. C. Superheterodyne

Figure 4 is the circuit of a typical a. c. - d. c. superhet receiver, with six points indicated for installation of resonant capacitors.

Resonant capacitor C_1 is effective in bypassing, through reduced impedance, any interference on frequencies near the

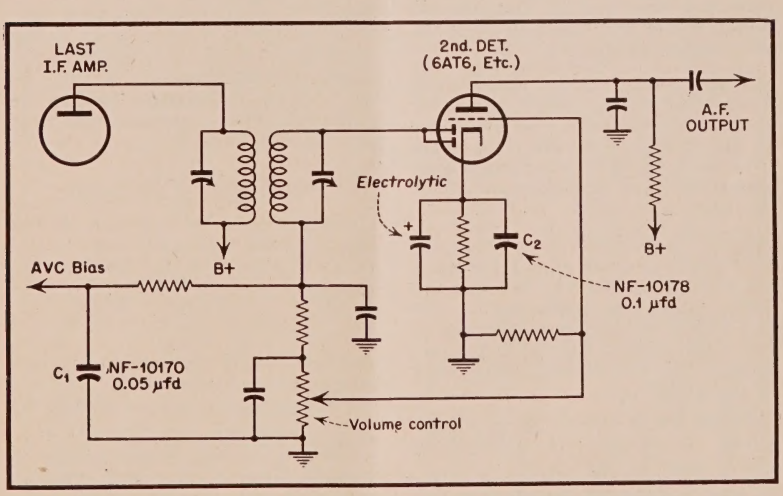

Fig. 2. Typical 455-kc. 2nd detector, showing installation points for resonant capacitors.

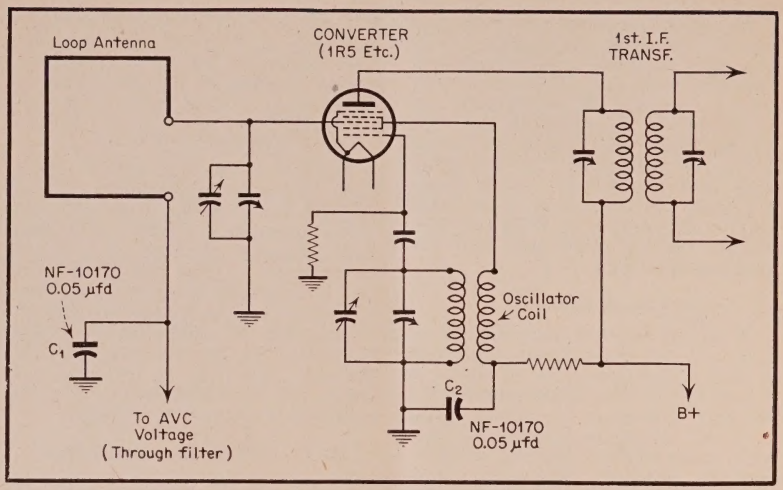

Fig. 3. Converter stage of portable receiver.

455 kc. intermediate frequency of the receiver which might be picked up by the antenna. C_2 will give the same interference-eliminating action as a secondary function. C_3 bypasses the B-plus end of all plate circuits at the intermediate frequency.

C_4 provides a 1.75 ohm path for i. f. fluctuations in the cathode current of the i. f. amplifier tube. The impedance of this path is more than 150 times lower than the cathode resistance commonly employed in cathode circuits of this type.

Resonant capacitor C_5, while acting primarily as a plate circuit bypass in the 1st audio amplifier, also will (by virtue of its low impedance at 455 kc.) bypass to ground any vestige of i. f. energy which might be transmitted through the interelectrode capacitance of the 12SQ7 tube.

Resonant capacitor C_6 effectively minimizes interference arriving via the power line. In the vicinity of high-powered commercial stations operating on frequencies near the receiver intermediate frequency, considerable interference may be picked up by overhead power lines and transmitted into the receiver. Another type of i. f. interference arriving over the same path occasionally is produced by two strong carriers which set up a beat note on or near the intermediate frequency of the receiver. A resonant capacitor in position C_6 will serve to suppress both types of interference.

Miscellaneous Applications

Applications other than those in the radio receiver field will occur to the curcuit designer. A few of the possible applications of Type NF resonant capacitors in coupling or bypassing applications, or both, may be found in the following devices: (1) carrier current intercommunicators, (2) carrier current remote control and model control units, (3) low-frequency r. f. oscillators, (4) interference traps, (5) in wave filters as the series resonant arm, and (6) beat-frequency audio oscillators.

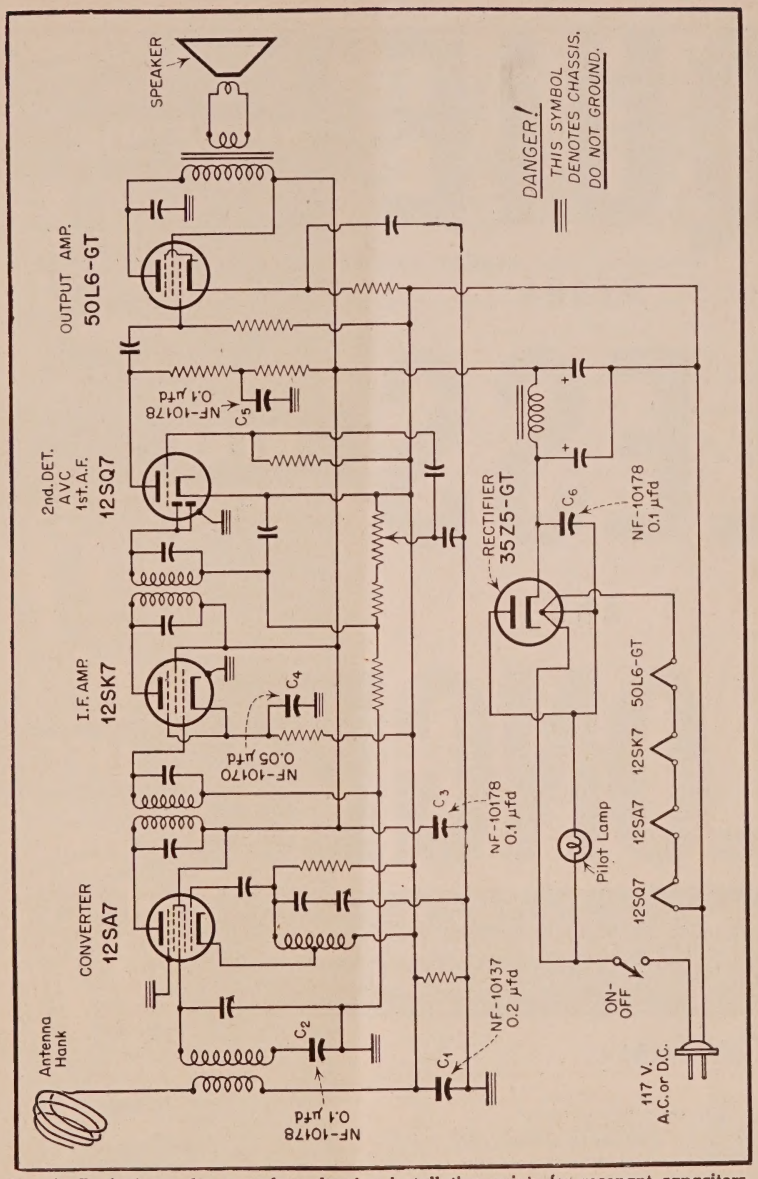

Fig. 4. Typical a.c.-d.c. superhet, showing installation points for resonant capacitors.

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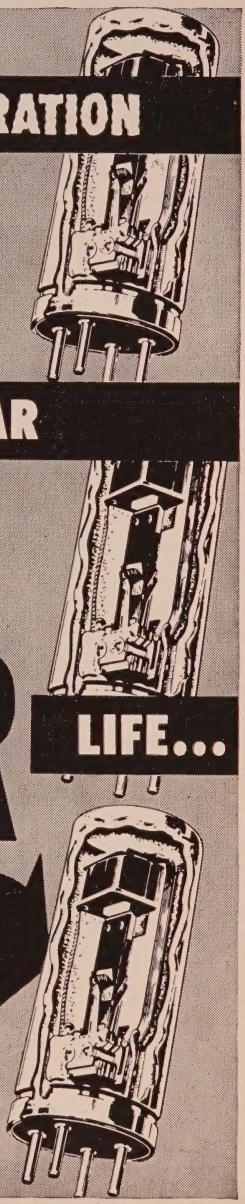

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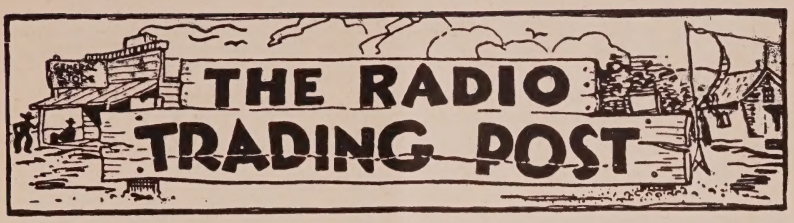

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All ads are published in the order received, but those held over two issues are discarded. Every effort will be made to include your ad either in the issue being prepared or the succeeding number, but will be automatically dropped thereafter.

FOR SALE—Kainer projector baffle for 12" speaker, $6. Merton Iwerks, P.O. Box 628, Forest City, N. C.

SELL OR TRADE—BC453 Q5er's, New Western Electric, complete with tubes and dynamotors. Want movie equip. George N. Schafer, 511 W. 39th St., Kansas City, Mo.

FOR SALE OR SWAP—Two SCR522 Transceivers for what have you? W. H. Woodard, Box 218, Rt. 1, Bangor, Mich.

FOR SALE—The most profitable radio service shop in Ohio's capital city, on main thorofare. Gross $16,000 year, 6 room modern brick home, shop 1½ story, drive-in facilities, $2,000 in test equip. Closed due to illness. Price, $20,000. Temporary address: Floyd Martin, Rt. 2, Box 866, Mesa, Ariz.

SALE OR SWAP—Magnavox 15" hi. fi. speaker, 15 ohm imp., $15; RCA battery portable receiver, leather case, $16; Thordarson T-30W14 amplifier, $30; W. E. driver unit with throat and horn, $6. Want tube tester. A. Komonci, 28-30 34 St., Astoria 3, N. Y.

SALE OR TRADE—Pilot FM tuner. Want St. James or other wire recording mechanism, or will take $15. A. A. Sromalla, 404 No. 16th St., Las Vegas, Nevada.

WANTED—Will buy complete Radio TV Servicing Course, testing equipment. Full details, please. W. Kay, 803 Goyeau, Windsor, Ont., Canada.

SELL OR TRADE—Two 3-speed 3 tube portable phonographs, one red alligator leatherette, one brown. Also one Douglas VOM, good condition. Sell all for $75, or swap. Richard Whelan, 46 Peterboro St., Boston 15, Mass.

FOR SALE—U.S. Television projection model. Has 4 band radio included (2 short wave and FM and AM bands), needs minor repairs. Also 8mm Keystone movie projector, like new. E. Caplan, 1045 Sutter Ave., Brooklyn, N. Y.

WANTED—TV sets in working condition, custom built radio for 1949 Mercury car, Rider Manuals, and FM tuner. Please state condition and price in first letter. Oliver A. Zucco, East Canaan, Conn.

FOR SALE—Keystone 16mm silent movie projector, model A-82 750 watts, used twice. Cost $96.50, no reasonable offer refused. Frank H. Snyder, Lock Box 1075, Troy, N. Y.

SWAP—16 ga. automatic shot gun, .22 automatic (both Savage), coat, boots, britches, shells. 16 ga. has Nydar sight. Want sweep generator and scope, Precision E-400, or E-400 PM E S-500 ,or equivalent. Chuck's Radio Shop, 624 Hawley St., Muskegon Hts., Mich.

FOR SALE OR TRADE—1 each, 110V to 5000 and 7500V xfmrs; Mallory Rect. Grid No. 1820B8; wireless record player; assorted auto "B" supplies and spkrs. Want test equip. C. Purcell, 12638 Shreve Rd., Whittier, Calif.

SWAP—A Hallicrafter SX42 and R42 speaker, both in perfect cond. Want Rider's Manuals 1 through to date. Aladdin Television Clinic, 5722 E. Gage Ave., Bell Gardens, Calif.

SELL OR TRADE—National Schools and NRI new communication courses. Also several Gernsback and prewar manufacturer's service manuals. J. F. Larkin, 803 W. Washington St., East Point, Ga.

FOR SALE—McMurdo-Silver "Atom-X" 701 transmitter. Includes 40 and 80 meter coils, crystal for each, all R.F. and modulator tubes, used past 3 months, $30. Don Hammond, S.S. South American, Georgian Bay Line, foot of Bates St., Detroit, Michigan.

SELL OR TRADE—RAK-7 receiver with spares and complete manual. Want TV set, good amateur receiver, quality GM counter, or mine detector. What have you? Bill Porter, Herscher, Ill.

WANTED—Late receiver, Scott, McMurdo Silver, National. Have Hallicrafters S-41-W; National 100A; "HO" Model R.R. equipment; typewriter; Harvard Classics; accordion; old U.S. stamp collection including complete Columbian issue. What have you? Rural Radio Service, R.F.D. 2, Box 669, Annapolis, Maryland.

FOR SALE—Altec-Lansing 15" model 603 hi-fidelity speaker in excellent condition, $30. Pilotuner in very good condition, new tubes and recently realigned, $15. Lester F. Wagner, Deansboro, New York.

FOR SALE—Ghirardi's Modern Radio Servicing, also Radio Troubleshooters Handbook, both for $6 (In A-1 cond.). Precision Model 844 ohm, volt millimeter, used very little, $30. Superior Model 450 tube tester, $25. H. Briglio, 484 Union Ave., Brooklyn 11, N. Y.

TRADE—One Edison phonograph, 1913 patent, uses cylinder type records, table model in good condition. Will swap for vacuum tube volt meter, tube checker, or outboard motor, or will sell for cash. Scrogham's Radio and Electric, 309 So. Main St., Jellico, Tenn.

FOR SALE—Approved electronics signal generator, 100kc to 75mc, cost $49, sell for $20. Ben Murray, 839 E. Grand Ave., Tower City, Pa.

FOR SALE—National Communication rec. NC-57 with manual, seldom used, perfect condition, original price $90, selling for $55. Harry De Vries, 1685 University Ave., Bronx, N. Y.

FOR SALE OR SWAP—12GP7 twelve inch electro - static deflection, cathode - ray tube. This tube is directly interchangeable with 7JP4 tube. Charles Doll, 344 Sussex Ave., Newark 7, N. J.

WANTED—Weston 660 or Weston 665 set tester, good condition, reasonable. Carl Tunwall, Fort Dodge, Iowa.

FOR SALE—Heathkit signal generator model G-1 calibrated, and Heathkit condenser checker. Both assembled and in A-1 condition. $20 takes both. Robert Murray, Jr., Box 353, Millsboro, Pa.

FOR SALE—Triplett professional All-Wave Radio Servicer Model 1175-B. This is a multitester and signal generator battery operated. In good condition, $20. George Wien, 133-48 243 St., Rosedale 10, L. I., N. Y.

FOR SALE—Good Hallicrafters S-40 receiver, $65. Also a stamp album, $3. Harold Buchert, Box 76, Piketon, Ohio.

FOR SALE—Supreme most-often-needed radio diagrams, 9 volumes, 1926 to 1949, excellent condition. First $10 takes them. Colonel G. T. Mackenzie, University of Kentucky, Lexington, Ky.

FOR SALE—RCA 15" Duo-Cone speaker, Model 515S1, latest type, never used, $25. John Schultz, 402 W. N. Grand, Springfield, Ill.

FOR SALE—Model CA-11 signal tracer, $8; Model B-45 signal generator, $12. Both in first class condition with fresh batteries and instructions. Thos. M. Jones, 217 West McArthur St., Corunna, Mich.

WANTED—Rider Manuals No. 14, 15, 16, 18, 19, 20. Also recent Radio TV home study courses and manuals, such as National Schools, NRI, CREI, etc. Give price or what you will take in trade. H. Wiegand, P.O. Box 161, Mt. Vernon, New York.

FOR SALE OR TRADE—Pilot Tuner, like new, $15. Or trade for Rider's Manuals or Sam's Photofact folders. A. E. Sweigert, 30 N. 4th St., Cressona, Pa.

TRADE—Will trade following type tubes: 5FP7, 5BP4, 3B24, 9002, 9003, 2C22, 872A, 815, 705A. Want test equipment or what have you? J. L. Cole, 1818 So. Tryon St., Charlotte, N. C.

TRADE—1949 - 50 Sprayberry Electronics course, less kits, A-1 condition. Would like ohmmeter, or what have you? S. Palmer, 410 So. 17th St., Fort Smith, Ark.

FOR SALE—Communications receiver, revamped Hallicrafter's Sky Champion. Has HRO dial, "R" meter, two IF stages, a total of nine tubes, Heterofil with earphones, price $50. R. W. Hessinger, 265 E. Walnut St., Allentown, Pa.

WANTED—6V dynamotor giving 250 volts 50 MA continuous. Must be 6V machine, not 12V going half speed. Prefer Carter receiving Magmotor as sold in surplus recently. State price. Radio Ranch, Rt. 1, Alamosa, Colorado.

FOR SALE—Blue neon radio sign; 18" Cinaudagraph PM speaker, Mod. S U; Hi-fiidelity 3" VC-30 watts. M. A. Porter, 1709 N. Larrabee St., Chicago 14, Ill.

FOR SALE—New Sam's Folders, numbers 11 through 15, 37, 39 through 44, 75 cents each. Nobo Company annex, 260 Salem Street, Medford, Mass.

FOR SALE—Vacuum tube voltmeter, sig. tracer. A matching set of Heathkit instruments used very little. Complete with leads, misc. servicing books and manuals, catalogs, and parts. Best offer takes everything. D. K. Drake, Box 377, Closter, N. J.

SALE OR SWAP—Electrical Engineers I.-C.S. (3); Principals of Radio Servicing by Hicks; Radio Engineer's Handbook by Terman; inverter; welding hood; 20 watt PA system, 6V or 115V, 12" record player "Airline" no speakers. Want photographic equipment. Bill Hagara, Box 224, Slickville, Pa.

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FOR SALE—Vols. 1, 2, 6, 7, 11, 14 and 1 Rider Record Changer Manual, $50; DuMont 274 scope, $50; Hickok 510X Tube checker and VOM, $40. A. H. Membery, 8143 Hendrie, Detroit 13, Michigan.

FOR SALE OR SWAP—Zenith Transoceanic, 1949 model, excellent condition with batteries, $60, or swap for Hallicrafter S-72. Herbert Perry, 129 East 60th St., New York City.

FOR SALE—Hallicrafter SX 25 with matching speaker, excellent condition. Write stating offer. Howard A. Keever, 129 West Silver St., Lebanon, Ohio.

TRADE—Complete N R I communications course and complete N R I servicing course. Will trade for good recorder. Harry Parker, 37 S. Goldthwaite St., Montgomery, Ala.

FOR SALE—Superior Model 600 tube and set tester combination practically new, asking $40. Rudolph Petracci, 54 Sewell St., Glassboro, N. J.

FOR SALE—Rider's Manuals: Vols. 6, $10; 7, $12; 12, $12. All pages clean and unmarked, excellent condition. Price includes postage within 200 miles. Louis Berkowitz, 31 Brainerd Rd., Allston 34, Mass.

FOR SALE—Model 9T246 RCA TV receiver, excellent, $130. F. Midgley, Fulda, Minn.

FOR SALE—Webster Model 70 record changer, intermixes 10" and 12" records, $20. Bill's Radio Shop, 1521 Larrabee St., Chicago 10, Ill.

FOR SALE—Webster 80 Wirecorder, $100 fob; Garrard RC-60 Intermix Changer with GE pickup, $25 fob; Sperti ultraviolet lamp, $15 fob; all perfect working condition. V. R. Hein, 418 Gregory St., Rockford, Ill.

WANTED—One coil for HRO7. "Coil AA" in good condition, at reasonable price. A. P. Rabito, 2835 Paris Ave., New Orleans 19, La.

FOR SALE—8mm Multefex titler, and Hallicrafters S20R Sky Champion with separate speaker. No reasonable offer refused. B. Abrams, 1828 Longfellow Ave., New York 60, N. Y.

FOR SALE—BC 624 (SR522 receiver), converted for 144 megs., complete with 12A6 output and trans., but less the three 12SG7's, $10. Also one BC455B rec., less tubes and one Model 22IT Triplett meter O-200Ua d. c., $5 each. A. A. Hale, 357 East Park Blvd., Akron 5, Ohio.

SELL OR TRADE—Two good 6 tube 2-band receivers, with speakers. Both for $25. Want used FM tuner. J. Mrofchak, 1951 Haines Rd., Lapeer, Mich.

SELL OR TRADE—Have fine SCR-522 2 meter transmitter complete and operating less power supply. Includes two ham xtals, antenna change-over relay, T17 carbon mike. Also meters grid 832's. E. Pinnick, 105 Buena Vista E, Highland Park 3, Mich.

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WANTED—200-400 kc coil set for BC-348 E.M.P. army receiver. D. E. Wiggins, West Lafayette, Ohio.

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FOR SALE—Dumont 274 5" scope in perfect condition, complete with instructions and manual, $90 fob Brooklyn. Signal Radio, 2077 Coney Island Ave., Brooklyn 23, N. Y.

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SELL—Hallicrafter S19R, perfect shape, like new, $50. Don Geegan, 2915 - 9 St. N, St. Petersburg, Fla.

FOR SALE—Rider Manuals, 6 through 13, all in perfect condition, $50 fob Butler. James H. Skillman, Grohman's Drug, Butler, Pa.

WANTED—Model 50 G.E. surplus wire recorder and playback. Cash or trade mobile equipment for same. C. B. Franz, 2110 Parkridge, Brentwood 17, Mo.

FOR SALE—Used TRF MacKay marine receiver, type 117C, with six plug-in coils, 15kc to 16mc, no power supply, best offer. Also QST's 1921 to 1941 complete; IRE Proceedings 1932 to 1939. Victor C. Serreze, 27 Mass. Ave., South Braintree, Mass.

SELL OR SWAP—McMurdo Silver model 802 HF receiver, 6-80 meter ham bands, with power supply. Want $25, S-38, or make offer for a swap. Herbert Greenberg, 775 East 52nd St., Brooklyn 3, N. Y.

SELL OR SWAP—Federal 269 photo enlarger, electronic timer, various items photographic. All $50, or swap for power supply for servicing auto radios, condenser analyzer, Rider's vol. 18, or what have you? A. Park, 616 Alice St., Monterey, Calif.

FOR SALE—University tweeter model 4401 6 watts to 15 kc, perfect, $8. Also Peerless S240Q output trans., $9. C. B. Parkinson, Jr., 431 N. Encinitas, Monrovia, Calif.

FOR SALE OR SWAP—Two Pilot FM tuners; Edwards FM tuner; AC bridge analyzer; condenser checker and signal tracer; two 1938 Dodge car radios, no controls. Want 35mm camera, typewriter, etc. Emile's Radio Serv., 104 West St., Bristol, Conn.

WANTED—Riders Manuals 14, 15, 16, and up. Must be in good or perfect condition. Harlan Dewitz., Radio Service, Wisner, Nebr.

WANTED—BC 683A receivers, plain or converted to 110V ac. State condition, price, amount. Also want BC455 6-9 megs. Radio Service Co., 381 Main St., Charlestown 29, Mass.

WANTED—Precision E-200C signal generator. Also Sam's Photofacts. State condition and price. Elmer E. Ash, 431 N. Milwaukee St., Porth Washington, Wisconsin.

FOR SALE—Hickok 532-P tube tester, $90; Precision E-200 C signal generator, $55; E.I.C.O. vacuum tube voltmeter with R.F. probe, $30. Or, make offer? J. Sovina, 432 Beaumont St., Warrior Run, Pa.

WANTED—3-speed record changer to play through radio. C. M. Broadwell, Morrisonville, Clinton County, New York.

FOR SALE—Ferret Model 600 signal gen., $30; Superior model 400 multimeter, $32.50; ATR auto radio battery eliminator, $15. Craftsmen Radio Service, 3754 East 14th St., Oakland 1, Calif.

WANTED—Any information concerning the BC 453B receiver. Also interested in National HFS converter, Hallicrafters S29R. Have 80-160 meter phone rig, 20 watt Webster portable, mobile, or stationary sound system for trade. William T. Neat, 1036 South Spring St., Springfield, Ill.

WANTED—Superior signal gen., model TV 30, tube tester, scope. Also 10 or 12" TV set in working order. Have Masco sound system complete with mike, stand, speakers, etc. John Arnold, P.O. Box 84, Bluffs 3, Ill.

FOR SALE—Hallicrafter S-39 portable, four bands, .55 to 30mc, ten front controls, inclosed speaker plus headphones, $65. Write for more details. J. P. Shulnes, Jr., 923 Timberland Ave., Pittsburgh 26, Pa.

FOR SALE—Rider's vols. 1 to 9 inclusive, good condition, master index, $25 fob; 1½V and 90V Portapak, A-1 cond., $4 postpaid. Want exact replacement power transformer for Crosley 517. Ellis Radio Service, 421 Grand St., Vermillion, Ohio.

FOR SALE—Weston model 777 portable tube checker, $35. Buds Radio Service, 1212 N. Shabbova St., Streator, Ill.

WANTED—2 meter trans. and receiver, complete. Prefer SCR522 metered in cabinets. State price and description. Center Television Co., 867 Broad St., Central Falls, R. I.

FOR SALE—Revere tape recorder complete with tape, $125. Also Speco sig. tracer (STAC) and probe, $32. Express prepaid. John Moy, Box 169 Canal Station, New York 13, N. Y.

FOR SALE—Boehme high speed ink recorder, type 4-G, speeds up to 400 wpm. First come first served. Richard Weirick, R 1, Vicksburg, Mich.

WANTED—Auto radio for '32 Plymouth. Have radios and parts to swap. Bill's Radio Shop, 4620 Stafford Rd., Lansing 10, Mich.

FOR SALE—RCA Model 621TS television set, like new. Only $60 if called for. H. Latko, 1922 Dickens, Chicago.

WANTED—VTVM in good condition. State make, model, and price. George W. Crist, 200 W. St. Joe, Litchfield, Mich.

FOR SALE—NC-100 A.S.D. communications receiver, recently aligned. Also kit of spare parts including power and audio trans. new NC speaker and cabinet. All for $87 fob. B. Mueller, 736 Rittenhouse St. N. W., Washington 11, D. C.

FOR SALE—2 each, Brush Model PL-20 phono pickup arms with equalizer No. 3761B less crystals. Also RCA MI-4273 voltage amplifier. J. R. Bradley, 7 Eighth St., Hicksville, N. Y.

SELL—Western Electric 4-A oil damped phono pickup with 2-A arm, $12; Merkle-Korff Flexo Action Motor, 110V a.c., 30 rpm, $4.50; Two Sangamo G-1 mica porcelain transmitting cord, .006 mf. 6000V, $2 ea. O. A. Riddel, P.O. Box 1930, Chicago 90, Ill.

WANTED—Treasure finder in good condition. Will pay cash or trade. Have Triplett sig. gen., model 2432, and talking machine with 60 round cylinder records. B. H. Buchanan, Hawk, N. C.

FOR SALE—Weston d.c. volt-milliammeter, 1000 ohms per volt, model 537 V.M.A., 4 different readings, 50-250-1000-100 meg. Just reconditioned by Weston. Name your price. John Rogers, 343 Henderson St., Jersey City 2, N. J.

WANTED—Will swap following for tubes: Hickok 4955-S, 4" meter, 0-10 meg, 0-500 ma, 0-1000V a.c.-d.c.; RCA record changer; '42 Ford radio; and Rider's Vol. 9, with index. C. F. Elgasser, Jr., 1920 Fern St., San Diego, Calif.

FOR SALE—Technical data and schematic for the construction of a 5" signal indicator using a 5AP1 or 5BP1 scope tube. A. Laperriere, Vercheres, P. Q., Canada.

SELL—Riders Vol 6, $6; Astatic 30 xtal mike, $4; Black Flyer phono motor, 2 speed, $10. Want BC-696, BC-454 SCR-522 xmtr. I. Seidman, 1535 Longfellow Ave., New York 60, N. Y.

SWAP—Home built motorbike with Briggs-Stratton motor. Want a good signal or sweep generator. Martin M. Frey, R.D. 1, Columbia, N. J.

WANTED—16" transcriptions. Have many interesting and hard to get 10" phonograph records to exchange. John J. Argo, 60 Tolman St., W. Newton 65, Mass.

FOR SALE—High fidelity 25 watt class "A" power triade amplifier, $100. Uses four 50 watt type 211 tubes at only 15% of their maximum ratings. Will trade for test equipment if in like new condition. Al Werhan, 103 Wesley St., Manlius, N. Y.

WANTED—Control head and cables in good condition to fit a Silvertone model 6000 auto set. Must be universal type to clamp under dash. State price. Robert Doane, RFD 2, Dexter, New York.

SWAP—Draftman compass set; lots of tubes, European and American; mags. and books; 60 watts Hammond P.A.; other items. Want TV chassis, scope, 16mm projector, or? Johnny Beaulieu, 2154 Lartigues, Montreal, Que., Canada.

SERVICE AVAILABLE—Assembly on all types of kits; sub or full assembly on radios. Also radio circuit drafting. Your inquiries solicited. Keating's Radio Service, 4868 W. 134th Pl., Hawthorne, Calif.

FOR SALE—Astatic JT-30 crystal mike, $5, and a two-way intercommunication set for $8. Lawrence Olson, 550 E. 148th Pl. Harvey, Ill.

SELL OR SWAP—Chinese short sword, engraved ivory or bone hilt and scabbard, plain blade (originally purchased in a Paris store for $45). Want BC459A and power supply or what have you? Thomas Unnold, Fryeburg, Maine.

FOR SALE—Philco TV receiver model 50T-1404, 12½", $100; Philco CR-12 8 tube auto radio, $45. Lewis Jones, 1124 Webster St., Schenectady, New York.

WANTED FOR CASH—A good sweep gen., a good signal gen., and a multimeter 20k ohms per volt. Or will trade for one of my two 5" scopes. Andy Bagatta, 998 First Ave., New York City 22, N. Y.

FOR SALE—NRI tube tester, $20; NRI R-C tester, $25; 5000 ohms per volt VOM, $10. With papers, good working condition. Walter Siuta, 4011 Lawndale, Detroit 10, Mich.

FOR SALE OR SWAP—Electric tester model 100 volts and continuity meter, with test leads and instructions. Cash $5, or what have you? Phillip C. Haley, P.O. Box 21, Dunkirk, Indiana.

FOR SALE—Signal generator; multimeter; condenser tester; tube tester; $110. Not sold separate. Send for further details. Michael S. Valentic, 304 Neff Ave., Masontown, Pa.

TRADE—Signal gen. model 1230 for Boes 35mm film loader and developing tank. Also want 35mm enlarger. S. Rand, 27 Forest Ave., Ossining, N. Y.

WANTED—Wire or tape recorder, with or without wire or tape. Will spend up to $60. Advise model number and age. Victor Simkalo, 4117 - 67 St., Woodside, N. Y.

FOR SALE—Vomax VTVM, good condition, $35. Merwin Company, Jensen Beach, Fla.

FOR SALE—Emerson pocket radio model 558; G.E.C. five tube receiver a.c.-d.c. 230 volts; Modern Radio Servicing and Radio Physics Course by Ghirardi in good condition. Mohanlal C. Rathod, Kenya House Jeyraj Plot St 9, Rajkot Saurastra, India.

FOR SALE—Sam's Photofact Sets from 1 to 26. Also Supreme Manuals 1, 3, 4, 5, reasonable. In like new condition. Harold J. Braun, 2121 Schiller Ave., Wilmette, Ill.

FOR SALE—NRI professional signal tracer, model 33, never used, in original carton, $40. Barnes Radio Service, 3546 Willett Ave., New York 67, N. Y.

FOR SALE—Heath vacuum tube volt meter, slightly used, $40. Walter L. Skleba, 1441 S. Pulaski Rd., Chicago 23, Ill.

FOR SALE—RCA 16mm sound and silent motion picture projector; Eicor tape recorder. Also will swap G.E. TC-3 tube tester. William P. Henninger, 51 N. Market St., Elizabethville, Pa.

TRADE—Eico scope, 5", perfect condition. Will trade for Meissner EX signal shifter with NBFM or similar VFO. Henry A. Galbraith, 1101 East Franklin, Evansville, Indiana.

FOR SALE—Sig. gen., NRI model 88, $26; 35mm Argus model C-3, $35; Hensoldt Wetzler binoculars 7 x 56, $40; Schick Colonel electric razor, $8; Precision VOM model 858P, $40. Carl W. Fulmer, RFD 4, Bethlehem, Pa.

TRADE—Telomike model 16. Want Riders vols. 1, etc., in rotation. Must be in excellent condition, no abridged. How many volumes am I offered? Andrew Selzer, 60 - 17th Ave., Newark 3, N. J.

FOR SALE—RCA AVR 15-A low frequency aircraft rec., tunes 200 to 400kc, with tubes, small light weight, $10 or best offer. Also home built portable rec. with tubes, $5. E. Stryszak, 5713 W. Archer Ave., Chicago 38, Ill.

SWAP—University Driver Unit, model PAH, 15 ohms, 25 watts, for a signal gen. or tube tester in good condition. R. W. Landry, 4044 Gentilly Rd., New Orleans, La.

SELL OR TRADE—Have Hickok 19XD crystal controlled signal generator, radio books, parts and tubes, Popular Science and Popular Mechanics magazines, binoculars, etc. Want Rider's vols., 6, 7, 8, 9, 16, 18, 19, 20, in excellent condition. T. Wojciechowski, 2837 Fulton St., Brooklyn 7, N. Y.

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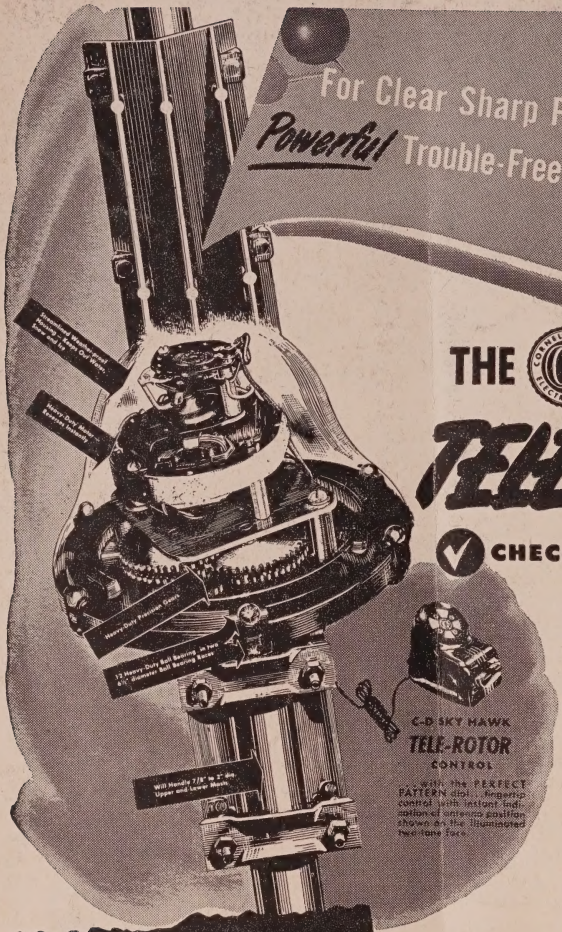
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